

## STORMS AND WEATHER WARNINGS.

By EDWARD H. BOWIE, Supervising Forecaster.

January, 1923, was notable for the large number of disturbances which traveled eastward over the United States and southern Canada and also for the rapidity of their movement. The rapid succession of Lows continued until near the end of the month, or to be specific, until the 26th, when a disturbance of the South Atlantic type moved up the coast, increased greatly in intensity and finally reached Newfoundland where its center remained until the close of the month. During this time, i. e., the 26th to 31st, a notable retardation was noticeable in the speed of the cyclones and anticyclones in the United States. The precise cause of this retardation is not apparent, but seemingly it was connected in some way with the pressure distribution in the vicinity of Greenland, as reports radioed from that region showed abnormally high pressure during this period. The anticyclones of the month traveled with speeds approximating those of the cyclones, and none of these were of the type that normally carries extremely cold weather far to the southward. In fact, nearly all of them moved in relatively high latitudes and the cold waves of the month were confined to the more northern sections of the United States. The prominent feature of the January, 1923, run of weather was the frequent and heavy snowfalls in the North Atlantic States.

## WASHINGTON FORECAST DISTRICT.

The month opened with a belt of low pressure on the Atlantic seaboard, with a center of minimum pressure over southern Virginia. As it advanced northeastward, it increased decidedly in intensity and caused general and heavy precipitation in the Middle Atlantic and New England States and gales on the coast north of Delaware Bay. The highest velocity reported was 64 miles from the southeast at Atlantic City, N. J. Following this disturbance, others of more or less marked intensity passed eastward over the Washington District and storm warnings were displayed for them as follows: On the 3d at and between Delaware Breakwater and Eastport, Me.; on the 7th on the Atlantic coast north of Cape Fear, N. C., and on the 8th warnings were continued on the New England coast at and north of New Haven, Conn.; on the 10th at and between Delaware Breakwater and Provincetown, Mass.; on the 11th at and north of the Virginia Capes and for the same coastal region on the 14th and 18th; on the 20th at and north of Sandy Hook, N. J.; on the 23d from Savannah, Ga., to the Virginia Capes and on the 24th for the same storm the warnings were extended northward to Eastport, Me., and continued for the same storm on the 25th for the coastal waters from Sandy Hook northward. This record of necessary storm advices indicates the frequency of storm winds during January on the Atlantic coast, for in practically every instance winds of gale force and, not infrequently, snows accompanied the disturbances for which warnings were issued.

Warnings of frost were issued on a number of days for the South Atlantic and Gulf States, but these regions did not receive the cold weather that normally is to be expected in January. Cold wave warnings were issued on a number of days for the Mississippi and Ohio Valleys, the lower Lake region and the North Atlantic States, but as a matter of fact, the only pronounced cold waves of the month in the Washington Forecast District occurred in the Atlantic States north of Maryland and in the lower Lake region and these were accurately forecast.

The usual amount of forecast and other information was issued for the aid of aviation activities. A notable part of this work was the issue of forecasts and information for a considerable number of seaplanes bound from Hampton Roads, Va., to southern waters. This work was done in cooperation with the United States Navy.

## CHICAGO FORECAST DISTRICT.

Except in the northern upper Lake region, January, 1923, was not so cold as usual in the Chicago Forecast District. In fact, over the southern half of the district the month was especially mild, temperatures averaging from 6° to 10° a day above the normal. Frequent precipitation occurred in the Lake region, where scarcely a day passed without some rain or snow being reported; while on the other hand, the weather was exceptionally dry in the Middle Plains States. In southwestern Kansas the lack of moisture was so pronounced that at the close of the month a great deal of ungerminated wheat was still lying in the dust where it has been sown.

*Cold-wave warnings.*—No general cold-wave warnings were issued during the month, nor were any warnings of this scope required. Except in one instance all warnings were for areas in the northern half of the district, and these were, as a rule, rather limited as to the extent of territory included. Most of the warnings issued were verified in whole or in part, but in a few cases cold waves occurred without warning. This was especially true in the Red River of the North Valley and adjacent territory, where the number of cold waves occurring appears to have been about as large as usual. The following is a summary of the cold-wave warnings issued:

2d: Northwestern Wisconsin and vicinity of Lake Superior in Minnesota.

3d: North Dakota and northwestern Minnesota.

4th: Northern Minnesota.

5th: Upper Michigan, northern lower Michigan, eastern and southern Wisconsin, Missouri, southern and western Illinois, and southern and eastern Iowa.

16th: Extreme northern lower Michigan.

17th: Northeastern Montana, North Dakota, and northern Minnesota.

18th: Minnesota, eastern South Dakota, upper Michigan, lower Michigan, and Wisconsin.

24th: Wisconsin and extreme eastern Minnesota.

28th: Montana, North Dakota, extreme western South Dakota, and Wyoming.

29th: Southern Wyoming, southern and central Minnesota, and eastern South Dakota.

30th: Minnesota, western upper Michigan, and northwestern Wisconsin.

*Stock warnings.*—The month was especially favorable for live stock in the grazing sections of the Plains States and no losses are known to have occurred as a result of adverse weather conditions. The only warning issued was that on the 29th for South Dakota, Nebraska, and Wyoming.

*Advisory warnings for Lake Michigan.*—No storms of severity affected Lake Michigan during the month, navigation having been carried on under more favorable conditions than ordinarily is the case in January. In fact, an unusual volume of business was reported as a result of the prevailing mild weather and absence of storms. Advisory warnings were issued on the 6th, 11th, 13th, 17th, 18th, and 23d, but only on the 18th were winds of gale force forecast.

As instances of the appreciation of the press in the efforts of this office toward cooperation the following